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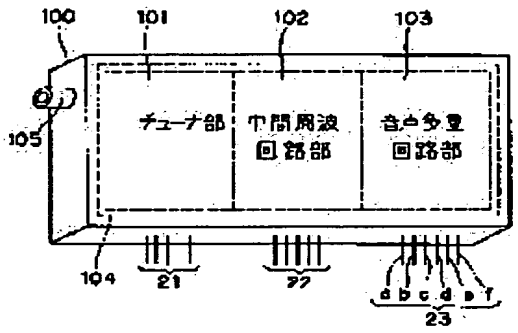
(54) TELEVISION TUNER UNIT

(57)Abstract:
PURPOSE: To provide the television tuner unit which facilitates adjustments in manufacture processes including even a sound multiplexing circuit and has stable performance.
CONSTITUTION: A tuner part 101 including a high frequency circuit and a mixer circuit, a video and sound intermediate frequency circuit 102 including a video intermediate frequency amplifying circuit, a video detecting circuit, a sound detecting circuit, a sound intermediate amplification frequency circuit, and an FM demodulating circuit, and a sound multiplexing circuit part 103 are incorporated in a single shield block housing 100. The intermediate frequency circuit part 102 and sound multiplexing circuit part 103, and tuner part 101 and intermediate frequency circuit part 102 are connected directly to each another in the housing 100.



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CLAIMS

[Claim(s)]
[Claim 1] The tuner section which contains a RF circuit and a mixer circuit in a single shield block case, While the image and the sound-IF-amplifier section containing an image intermediate frequency amplifying circuit, an image detector circuit and a sound detector circuit, a voice middle amplification cycle circuit, and FM demodulator circuit, and the voice multiplex circuit section are built in and considering as unification structure The television tuner unit which comes to consider between the above-mentioned intermediate frequency circuit section and the voice multiplex circuit sections and between the above-mentioned tuner section and the above-mentioned intermediate frequency circuit sections as direct connection inside the above-mentioned case.
[Claim 2] The television tuner unit which comes to form the above-mentioned tuner section, the above-mentioned intermediate frequency circuit section, and the above-mentioned voice multiplex circuit section on the same substrate in a television tuner unit according to claim 1.
[Claim 3] It is the television tuner unit in which a connector comes to make connection between the above-mentioned intermediate frequency circuit section and the voice multiplex circuit section, and connection between the above-mentioned tuner section and the above-mentioned intermediate frequency circuit section to direct connection while being formed in a television tuner unit according to claim 1 on a substrate with respectively separate the above-mentioned tuner section, the above-mentioned intermediate frequency circuit section, and the above-mentioned voice multiplex circuit section.
[Claim 4] The television tuner unit characterized by preparing the terminal relevant to the above-mentioned voice multiplex circuit section in a television tuner unit according to claim 1.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the television tuner unit built in a television set or VTR.
[0002]
[Description of the Prior Art] In order to make it easy to add the function in which a television signal is receivable to not only a television receiver but VTR equipment, or other visual equipments, the television tuner for receiving a television signal unit-izes a circuit block, and it is made to constitute it.
[0003] Drawing 3 is the block diagram of an example of the conventional television receiver. That is, for the channel selection control circuit which a television tuner unit and 2 become from a microcomputer in 1, and 3, as for an image processing circuit and 5, in drawing 3 , an image and a sound-IF-amplifier block, and 4 are [a voice multiplex circuit and 6] speech processing circuits.
[0004] Including the RF circuit 11 and a mixer circuit 12, from the television broadcasting wave received with the antenna 7, the broadcast wave signal of a desired broadcast channel tunes in the television tuner unit 1 by the channel select signal from the channel selection control circuit 2, the signal is changed into an intermediate frequency signal, and it is supplied to image ********** 3. Moreover, the channel selection control circuit 2 receives the signal for the auto fine tuning from the intermediate frequency circuit block 3, and it controls so that the channel selection state in the television tuner unit 1 will become suitable.
[0005] An image and the sound-IF-amplifier block 3 contain the image intermediate frequency amplifying circuit 31, the image detector circuit 32 and a sound detector circuit 33, a sound IF amplifier 34, and the FM demodulator circuit 35. And the video signal which image detection was carried out and was obtained is supplied to the image processing circuit unit 4, the output is supplied to CRT display 8, and a picture is reproduced.
[0006] Moreover, FM recovery output from the circuit block 3 is supplied to the voice multiplex circuit 5, when it is not multiplex broadcasting, the signal of a monophonic recording is supplied to Loudspeakers 9L and 9R through the speech processing circuit 6, and monophonic reproduction of it is carried out. Moreover, when multiplex broadcasting is stereophonic broadcasting, from this voice multiplex circuit 5, the sound signal output of the left and a right channel is obtained, this is supplied to Loudspeakers 9L and 9R through the speech processing circuit 6, and stereo voice is reproduced.
[0007] Moreover, in the voice multiplex circuit 5, in bilingual broadcast, a keynote voice signal and a subsound signal are taken out, and Loudspeakers 9L and 9R are reproduced, respectively. In the case of voice multiplex [U.S.], since the sound signal of a second audio program (SAP is called hereafter) is sent, this can be reproduced by Loudspeakers 9L and 9R through the speech processing circuit 6.
[0008] In addition, in the voice multiplex circuit 5, the mode change-over switch of whether to choose which programs, such as a stereo playback mode, two-language broadcast mode, and SAP mode, is prepared. Moreover, the output terminal for carrying out lighting control of the Light Emitting Diode (light emitting diode) used as the indicator for stereophonic broadcasting

reception, two-language broadcast reception, and SAP reception is also prepared in this voice multiplex circuit 5.
[0009]
[Problem(s) to be Solved by the Invention] By the way, as mentioned above, the image and the sound-IF-amplifier block 3, and the voice multiplex circuit 5 of the conventional television tuner unit were the things of another object only including the RF circuit and the mixer circuit. But although there were some which are included to the intermediate frequency circuit block 3 as a television tuner unit, it was another object in the voice multiplex circuit 5 also in that case.
[0010] For this reason, adjustment was carried out by adjustment of the voice multiplex circuit 5 independently of the television tuner unit, an image, the sound-IF-amplifier block 3, etc.
[0011] However, the property of the voice multiplex circuit 5 having un-arranged [from which adjustment becomes two stages] as it finished setting up each circuit section as a set and readjusted again after that, after adjusting every circuit section independently, since the output level of the television tuner unit 1 of the preceding paragraph and the output level of the intermediate frequency circuit block 3 were influenced.
[0012] Moreover, since each circuit section existed in a set in another space when it considers as the set which finished setting up each circuit section, it was hard to secure the stability of a performance by the difference among conditions, such as temperature and a power supply. And since operation and a performance were determined after finishing setting up as a set, the limitation was in rationalization of a mass-production process, and decline in a percent defective.

[0013] For example, the block diagram centering on the adjustment in the voice multiplex circuit 5 is shown in drawing 4 . That is, as shown in drawing 4 , FM recovery output of an image and the sound-IF-amplifier block 3 is inputted into a filter circuit 52 through the input-level adjustment means 51 of the voice multiplex circuit 5.
[0014] This filter circuit 52 is for separating a keynote voice signal and a subsound signal, and it is constituted so that a filter shape may be adjusted by the filter shape adjustment means 53. With this filter circuit 52, the voice multiplex circuit 5 has the matrix circuit 54. In this matrix circuit 54, when a voice multiple signal is a stereo signal, the sound signal of the left and a right channel is obtained, and, in the case of bilingual multiplex broadcasting, a keynote voice signal and a subsound signal are obtained. It is made to be performed by the adjustment of separation in this case by the adjustment means 55.
[0015] However, adjustment by the filter shape adjustment means 53 and the adjustment by the separation adjustment means 55 are dependent on an input level. For this reason, readjustment is needed, once the output level of the circuit block 3 of the preceding paragraph changes, even if it adjusts with the input-level adjustment means 51. Since they are another unit, respectively, the above-mentioned readjustment is needed and, generally the circuit block 3 and the voice multiplex circuit 5 need to readjust in a manufacturing process after setting up, if environment changes.
[0016] This invention tends to offer the television tuner unit which enabled it to sweep away the above fault.
[0017]
[Means for Solving the Problem] In order to solve the above-mentioned technical problem, it sets to this invention. The tuner section 101 which contains a RF circuit and a mixer circuit in the single shield block case 100 when the reference mark of the below-mentioned example is made to correspond, While the image and the sound-IF-amplifier section 102 containing an image intermediate frequency amplifying circuit, an image detector circuit and a sound detector circuit, a voice middle amplification cycle circuit, and FM demodulator circuit, and the voice multiplex circuit section 103 are built in and considering as unification structure Between the above-mentioned intermediate frequency circuit section 102 and the voice multiplex circuit sections 103 and between the above-mentioned tuner section 101 and the above-mentioned intermediate frequency circuit sections 102 are considered as direct connection inside the above-mentioned case 100, and are characterized by the bird clapper.
[0018]

[Function] Since according to the television tuner unit by this invention of the above-mentioned composition it is stored into one shield block case to the voice multiplex circuit considered as another circuit block and these circuits exist in the same space conventionally, the temperature characteristic and a power requirement become equal and a performance is stable.
[0019] Moreover, since filter adjustment and separation adjustment since the tuner section, the intermediate frequency circuit section, and the voice multiplex circuit section exist in a unit can also be performed and the input level of the voice multiplex circuit section does not change, adjustment can also be managed at once. [in / the voice multiplex circuit section / at the adjustment stage about this unit]
[0020]
[Example] Hereafter, one example of the television tuner unit by this invention is explained, referring to drawing.
[0021] Drawing 1 is drawing showing the composition of the television tuner unit of this example. In drawing 1 , 100 is the shield block case of the television tuner unit of this example, and inside this case 100, each circuit block of the television tuner 1 shown in above-mentioned drawing 3 , an image and a sound IF amplifier 3, and the voice multiplex circuit 5 is built in, and it is constituted.
[0022] That is, in drawing 1 , 101 is the television tuner section and this contains a RF circuit and a mixer circuit. Moreover, 102 is an image and the sound-IF-amplifier section, and contains an image intermediate frequency amplifying circuit, the image detector circuit, the sound detector circuit, the voice intermediate frequency amplifying circuit, and FM demodulator circuit. Furthermore, 103 is the voice multiplex circuit section.
[0023] In the case of this example, each [these] circuit sections 101, 102, and 103 are formed on the same substrate 104. In addition, 105 is the input terminal of RF signal received with the antenna.
[0024] And it is directly linked, respectively between the tuner section 101 and the intermediate frequency circuit section 102 and between the intermediate frequency circuit section 102 and the voice multiplex circuit section 103. Similarly, in the case of this example, I/O of the tuner section 101 and the intermediate frequency circuit section 102 is also linked directly.
[0025] The terminal 21 drawn from the case 100 of a unit is drawn from the tuner section 101, and is a terminal for connection with the channel selection control circuit (CPU) 2 shown in drawing 3 . Moreover, the terminal 22 drawn from the case 100 is drawn from an image and the sound-IF-amplifier section 102, and this is an object for connection with the channel selection control circuit section 2, and an object for connection with the image processing circuit 4 in drawing 3 .
[0026] Furthermore, the terminal 23 drawn from the case 100 is drawn from the voice multiplex circuit section 103, and this is a terminal for connection with the speech processing circuit 6 in drawing 3 , and other circuits.
[0027] A voice multiplex output mode change terminal and f of the output terminal of SAP according [c and d] in a to the stereo sound signal output terminal of the left and a right channel and a voice switch if an example of a terminal 23 is shown according [a stereo indicator display terminal and b] to the indicator display terminal of SAP, and e are muting terminals.
[0028] If it means that existence of the terminal 23 about a voice multiplex circuit is equipped with a voice multiplex indicator display terminal and a voice multiplex output switch terminal as a television tuner unit and this television tuner unit is used as a tuner unit of VTR or other visual equipments with a built-in television tuner, the visual equipment concerned can be made to be easily equipped with the receive section dealing with voice multiplex.
[0029] In this case, it becomes possible to connect the required terminal of the terminals 23 as I/O of the microcomputer which controls a television tuner unit, and the control signal to a voice multiplex circuit can also be dealt with as a control signal from the microcomputer to a television tuner unit, and the modal control of a voice multiplex circuit and other control also become easy.

[0030] And in this way, by having also built in the voice multiplex circuit section 103 and having unified in the shield block case 100 as a television tuner unit, compared with the case where

adjustment is performed for every circuit section, it is good and tuning becomes very easy by 1 time as a television tuner unit.
[0031] Moreover, since it is contained and unit-ized by the case 100 with each common circuit sections 101, 102, and 103, the temperature characteristic and the conditions of a power supply also become equal, a performance is stabilized, and a percent defective falls.
[0032] And since a voice multiplex decoder function is included as a television tuner unit in this case and the output of voice multiplex control, a mode display, a stereo, or a second audio program can obtain from a television tuner unit, there is a merit that the user-friendliness as a television tuner unit becomes good -- the receiving set dealing with multiplex broadcasting can be constituted easily.
[0033] Drawing 2 is other examples of the television tuner unit by this invention. In this example, the tuner section 101, an image and the sound-IF-amplifier section 102, and the voice multiplex circuit section 103 are formed in the respectively separate substrates 111, 112, and 113. And connectors 121 and 122 are directly linked between the tuner section 101 and the intermediate frequency circuit section 102 and between the intermediate frequency circuit section 102 and the voice multiplex circuit section 103.
[0034] Thus, versatility of a television tuner unit can be enlarged by having used each circuit sections 101, 102, and 103 as another substrate, and having made it structure which is combined by connectors 121 and 122. That is, for example, the television tuner unit corresponding to various sound multiplex systems, such as a television tuner unit for Japan, a tuner unit for the sound multiplex systems for the U.S., and a sound multiplex system of a German country, can be easily constituted by transposing each circuit section to a suitable thing suitably.
[0035]
[Effect of the Invention] By having built in the tuner section, the intermediate frequency circuit section, and the voice multiplex circuit section which existed in the interior of a single shield block case as a separate circuit block conventionally according to this invention, as explained above Since it is made for these circuit section to exist in the same environment, while adjustment can be managed at once, since the temperature characteristic and a power requirement become fixed, a performance is stabilized, and it contributes to rationalization of a mass-production process, and a percent-defective fall.
[0036] Moreover, as a television tuner unit, since it will have even a voice multiplex circuit, there is a merit of becoming possible to be able to perform the indicator operation change for a stereo output display, and to perform a voice multiplex-mode switch etc. by the television tuner unit independent.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram of one example of the television tuner unit by this invention.
[Drawing 2] It is the block diagram of other examples of the television tuner unit by this invention.
[Drawing 3] It is the block diagram of the example of composition of a television receiver.
[Drawing 4] It is drawing for explaining adjustment of a voice multiplex circuit.
[Description of Notations]
100 Shield Block Case
101 Tuner Section
102 Image and Sound-IF-Amplifier Section
103 Voice Multiplex Circuit Section
105 Common Substrate
111-113 Substrate
121 122 Connector

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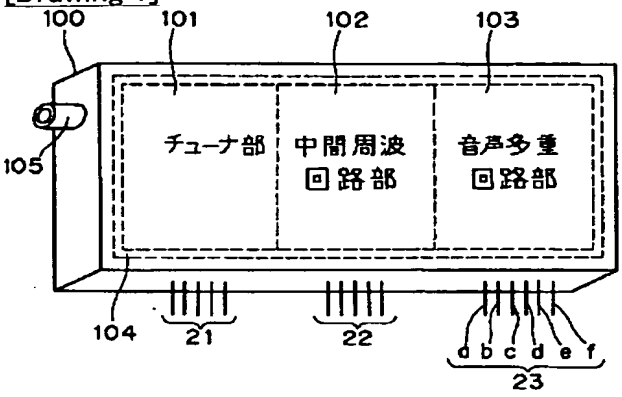
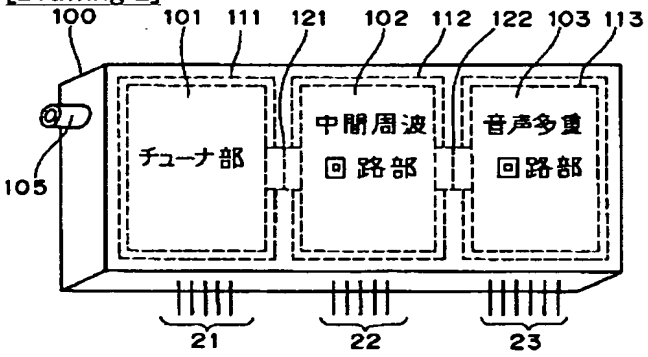
DRAWINGS

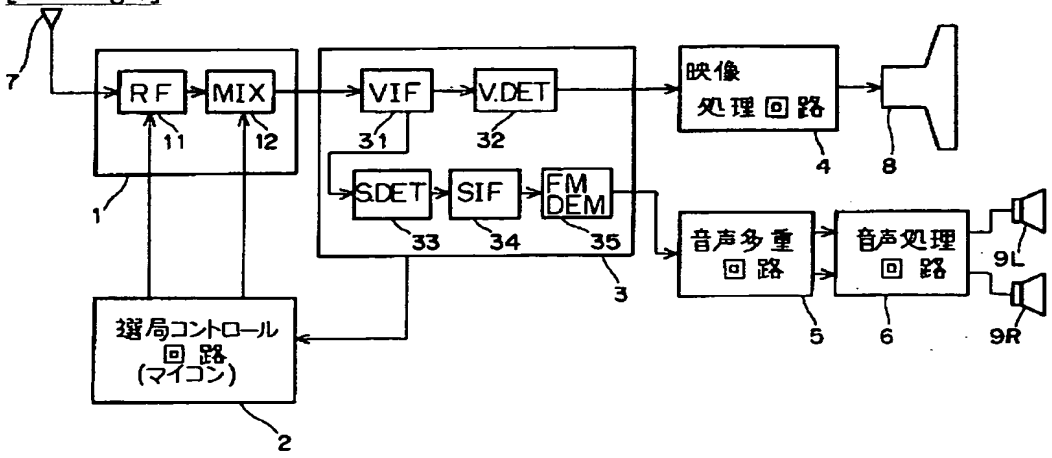
[Drawing 1]



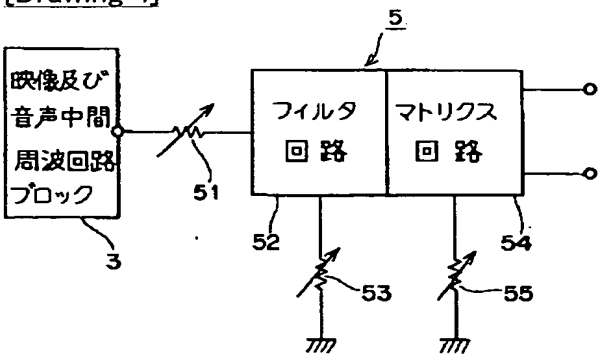
[Drawing 2]



[Drawing 3]



[Drawing 4]



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